

## Claims

- [c1] 1. A communication system comprising:
  - a) a microelectronics chip comprising a power distribution network;
  - b) a transmitter operatively configured to generate a communication signal and provide said communication signal to said power distribution network; and
  - c) a receiver operatively configured to receive said communication signal from said power distribution network.
- [c2] 2. A communication system according to claim 1, wherein said power distribution network comprises a wire grid.
- [c3] 3. A communication system according to claim 1, wherein said transmitter comprises a current sync transmitter.
- [c4] 4. A communication system according to claim 1, wherein said power distribution network operates on a direct current power voltage.
- [c5] 5. A communication system according to claim 4, wherein said communication signal is superimposed on said direct current power voltage.

- [c6] 6. A communication system according to claim 1, wherein said power distribution network has a power voltage, said power voltage having a value not greater than 10 volts.
- [c7] 7. A communication system according to claim 4, wherein said communication signal has a base frequency that corresponds to the peak impedance of said direct current power voltage.
- [c8] 8. A communication system according to claim 1, wherein said communication signal comprises a spread spectrum signal.
- [c9] 9. A communication system according to claim 1, wherein said microelectronics chip comprises one or more voltage islands.
- [c10] 10. A communication system according to claim 9, wherein said communication signal differs on at least two of said one or more voltage islands.
- [c11] 11. A communication system according to claim 1, comprising a plurality of microelectronics chips, wherein said communication signal travels across said plurality of microelectronics chips.
- [c12] 12. A communication system according to claim 1,

wherein said microelectronics chip comprises said transmitter and said receiver.

- [c13] 13. A communication system according to claim 1, further comprising a power data switch segmenting said power distribution network into a plurality of power distribution network segments and operatively configured to control routing of said communication signal amongst said plurality of power distribution network segments.
- [c14] 14. A communication system according to claim 1, wherein said microelectronics chip comprises a core.
- [c15] 15. A communication system comprising:
  - a)a power distribution network operating on direct current;
  - b)a transmitter operatively configured to generate a communication signal and provide said communication signal to said power distribution network; and
  - c)a receiver operatively configured to receive said communication signal from said power distribution network.
- [c16] 16. A communication system according to claim 15, wherein said power distribution network is part of a microelectronics chip.
- [c17] 17. A communication system according to claim 15, wherein said power distribution network has a power

voltage, said power voltage having a value not greater than 10 volts.

- [c18] 18. A method of communicating in an integrated circuit, the method comprising:
  - a)generating a communication signal;
  - b)providing said communication signal to a first location on a power distribution network of a microelectronics chip; and
  - c)receiving said communication signal from a second location on said power distribution network.
- [c19] 19. A method according to claim 18, said power distribution network has a power voltage, said power voltage having a value not greater than 10 volts.
- [c20] 20. A method according to claim 18, wherein said power distribution network operates on a direct current power voltage.